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The Problem of Vocabulary in Reading

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In his *Defence of Poetry*, published in 1821, Shelley wrote: "We have more moral, political, and historical wisdom than we know how to reduce into practice; we have more scientific and economical knowledge than can be accommodated to the just distribution of the produce which it multiplies." He went on to say that we lacked the creative faculty to imagine that which we know, the generous impulse to act that which we imagine, that our calculations have outrun conception, that we have eaten more than we can digest. We are living circumscribed, enslaved lives. We lack the poetry of life. Shelley was talking, I assume, about the creators of excellence, the dreamers of dreams, the poets with bold conceptions described by Shakespeare

> . . . as imagination bodies forth
> The forms of things unknown, the poet's pen
> Turns them to shapes and gives to airy nothing
> A local habitation and a name.[1]

We cannot all be creators of excellence, but we can be purveyors of excellence. We can spend our time bringing the best to the most. Indeed, the essence of today's world-wide struggle is the desire of about two billion people in this world to share the good things that the other half-billion have. Such sharing in the past has been confined to a small number. Illiteracy is as high as 90 per cent in some undeveloped countries.

The sharing process has moved ahead in the United States under a philosophy of democracy aiming at the greatest possible growth of the common man. The American common school was founded with the goal or ideal of the diffusion of information. In the last century we had the sharing of ideas among

[1] *A Midsummer-Night's Dream.* Act 5, Scene 1, Lines 14-17.

adults through the press, through the Mechanics Institutes, Chautauquas, Lyceums, business colleges, Granges, Unions, and other groups. All aimed in some way to share insights, distribute knowledge and skills, to let the ordinary man in on things. The great growth of our elementary schools came after 1850, of our high schools after 1900, of our junior colleges after 1950—much of it is yet to come.

How does all this relate to the problem of vocabulary in reading? Certainly, in preparing reading materials for all levels of ability, we need to have information about the experiences, the interests, the needs, the background, the information already possessed by these readers. All suggest the need for vocabulary study. Words, after all, are the deposit of experience—the result of what we have done or are thinking. They are the bearers of meaning—the symbols which represent experience.

To have data on the vocabulary of individuals whom we are trying to teach is imperative. Let us not call such data "mere words." Words represent the concepts, the distillate of previous experience.

WHAT data on vocabulary in reading and writing do we now have? What do we need? We already know the words that adults and children are most likely to use when writing letters and thus to read. Here we have studies by Ernest Horn,[2] by Henry D. Rinsland,[3] by Frederick S. Breed,[4] and many others. Their studies have proved useful in eliminating from spelling instruction the words only rarely used.

From these studies we can predict that about 50 simple words will make up about half of the total words used in writing or reading. These studies also disclose a basic difficulty found in all frequency studies of vocabulary. The prediction of the additional words beyond the 50 commonest which an individual will write gets progressively poorer and the usefulness of additional words diminishes rapidly. Horn points out that "two thousand words with their repetitions make up 95.05 per cent of the running words in adult writing; 3,000, 96.9 per

[2] *A Basic Writing Vocabulary.* Iowa City, Iowa: University of Iowa, 1926 (First Series, No. 4).

[3] *A Basic Vocabulary of Elementary School Children.* New York: Macmillan Company, 1945.

[4] "What Words Should Children Be Taught to Spell? Vocabularies of Various Types," *Elementary School Journal,* XXVI (November, 1925), pp. 202–14.

cent; 4,000, 97.8 per cent; and 10,000, 99.4 per cent."[5] This means that it is hard to predict the words which a person will write once he has gone beyond 2,000 words. You would have to add 8,000 words to a common spelling list to increase the vocabulary from 95.05 to 99.4 per cent.

We also know the words and the frequency of their appearance in a wide variety of reading materials. Thus we have Thorndike and Lorge's study of the most frequently appearing 30,000 words,[6] as well as their studies of semantic frequencies; the Buckingham-Dolch list which combines several lists,[7] and the Gates list of 1,500 common words.[8]

We have studies of the spoken vocabulary of young children, notably the International Kindergarten Union List compiled by Madeline Horn and her collaborators.[9] One of these studies appeared in this magazine in 1935. The report, based on a series of dictations to a dictaphone plus a check list used by the parents, shows that a five-year-old girl had learned over 3,145 words for she used them in conversation.[10] This would be about 800 words learned a year for four years or around two a day.

Studies in vocabulary frequently have served, and continue to serve, a useful purpose, but such studies have certain weaknesses which make them not as useful in preparing reading materials as we once hoped. E. W. Dolch concludes that

> . . . word counts [of children's speech and writing] are useful and desirable. They "stake out" areas of word knowledge. They tell us what children may know about by discovering use of words by a few children. Beyond that point, however, they are hopelessly unreliable because of the factors of opportunity and emotional set. . . . As a result, though we may use word counts, the only source of genuine knowledge of children's word knowledge is systematic testing procedure.[11]

[5] Horn, Ernest. *Teaching Spelling.* Washington, D. C.: American Educational Research Association, National Education Association, 1954, p. 6.

[6] Lorge, Irving, and Thorndike, Edward L. *The Teacher's Word Book of 30,000 Words.* New York: Bureau of Publications, Teachers College, Columbia University, 1944. *See also* "Semantic Count of English Words," prepared with the assistance of the Institute of Educational Research, Teachers College, Columbia University, 1938.

[7] Buckingham, B. R., and Dolch, E. W. *A Combined Word List.* Boston: Ginn and Company, 1936.

[8] Gates, Arthur I. *A Reading Vocabulary for the Primary Grades.* New York: Bureau of Publications, Teachers College, Columbia University, 1935.

[9] Horn, Madeline Darrough, and others. *A Study of the Vocabulary of Children before Entering the First Grade.* Baltimore, Maryland: International Kindergarten Union, 1928.

[10] Uhrbrock, Richard Stephen. "The Vocabulary of a Five-Year-Old," *Educational Research Bulletin,* XIV (April 17, 1935), pp. 85–97.

[11] Dolch, E. W. *Methods in Reading.* Champaign, Illinois: Garrard Press, 1955, p. 258.

The difficulty with such frequency studies of reading materials is similar to the one that Horn has noted about spelling words. A limited number of words—1,000 or 2,000, certainly not more than 3,000—give us the easily predicted words. From then on we have moved beyond the words of common experience—the structural words in the English language, the household words, the words of time, place, direction, parts of the body, and the like.

CAN we use these frequency data and predict the words that children will know grade by grade? Thorndike and Lorge set up certain suggestions for the use of their frequency data. They suggest that during each successive grade the following number of words selected from their list should be taught "for permanent knowledge:"

	Number of Words
Grades I and II	1,069
Grade III	952
Grade IV	1,864
Grades V and VI	1,867
Grades VII and VIII	1,896
Grade IX	1,574
Grade X	1,064
Grade XI	1,442
Total	11,728[12]

They conclude that graduation from high school "may be made conditional upon knowledge of at least 15,000 words." Assuming that he came to school with 3,000 words, this would mean adding about 1,000 words a year or three words a day. This is a sensible goal and probably accords well with actual vocabulary growth and possibilities.

Unfortunately, however, there are many discrepancies between frequency of occurrence of words and their familiarity. The correlation is not high—perhaps somewhere between .40 and .50. Kirkpatrick and Cureton found a correlation of .47 with a multiple-choice test and the Thorndike-Lorge frequency. However, the estimates of five judges correlated .71 with the same test. The correlation increased to .81 by combining both methods.[13] Note the following words which Thorndike and Lorge found occurring four times or less per 18,000,000 running words. Statistically, then, youngsters should not be ex-

[12] Lorge and Thorndike, *op. cit.*, p. xi.

[13] Kirkpatrick, James J., and Cureton, Edward E. "Vocabulary Item Difficulty and Word Frequency," *Journal of Applied Psychology*, XXXIII (August, 1949), pp. 347–51.

pected to know words like these:

accompanist	backache	bunghole	flagman
adorably	backbite	butterfat	flare-up
aflutter	backdoor	cashew	floodlight
airdrome	bedbug	clubman	furthermost
air-mail	beefy	clubroom	get-together
anklet	black-list	cowbell	goody-goody
asterisk	bluegrass	crossways	grandaunt
astigmatism	bootee	faultfinding	grayhound
avoidable	bucksaw	firebrick	handhold[14]

According to their scheme, words having ratings of less than three are for twelfth-graders. Yet this includes words like *abbreviate, abbreviation, able-bodied, ably, abolitionist, absent-minded, abusive, accelerate, acceleration, accelerator, accordion, acrobat, adenoids, adrift, advertiser, aflame*—words known by two-thirds of sixth- or eighth-graders.

The word lists noting frequency of word counts are helpful in preparing reading materials. But, as I noted earlier, the frequency score does not correlate highly with familiarity. Is there a better approach to the problem?

The difficulty with sampling millions of running words is that we are sampling nothing really homogeneous. I suggest, therefore, that further studies of general frequency are not likely to be very fruitful. What we especially need are studies of specialized areas—technical fields—and the like.

SOME of the earliest studies in technical vocabulary were done by Luella Cole and Sidney Pressey. In 1923, Mr. Pressey with Bertha Lively reported a study entitled "A Method for Measuring the Vocabulary Burden of Textbooks."[15] Luella Cole, in *The Teacher's Handbook of Technical Vocabulary*,[16] lists words from her own studies combined with words from the studies of others. She also presents the Thorndike ratings of these words. However, since these are not semantic counts one can hardly assume that such words as *bond, note, check, balance*, are appearing frequently because of their technical meaning.

Luella Cole's lists of social-studies terms are quoted by Kelley and Krey in *Test and Measurements in the Social Studies*. There was usually a steady gain from grade to grade; some words, however, showed a loss. These tended to be words

[14] Lorge and Thorndike, *op. cit.*, p. 242.
[15] *Educational Administration and Supervision*, IX (October, 1923), pp. 389–98.
[16] Bloomington, Illinois: Public School Publishing Company, 1940.

where the test itself was inadequate or where the words were no longer studied in the school.[17] From Luella Cole's study we can conclude that there is a mean growth of about 8 per cent a year with greatest growth in the junior high and less in the upper years of the high school.

This may be because the ceiling kept getting closer and closer. My own study of the growth of understanding of technical terms in business from Grades VII to XII showed an average gain of 6 per cent a year with a big gain in the seventh or eighth grade. Luella Cole thought that growth in the senior high school was below normal expectancy and suggested that it might be due to lessened attention to the vocabulary problem in high school.[18]

I have previously reported a technique for vocabulary control in preparing reading materials in health, and the article is briefly summarized here. The directors of the National Tuberculosis Association thought that their materials for the layman were inadequate and launched a careful study of these pamphlets. A readability analysis showed that their materials were averaging around ninth and tenth grade when the average reading level of the persons who are most likely to get tuberculosis is probably around Grade VI—the poorer people, the less-schooled people living in crowded conditions. Next, experts in the field of tuberculosis were asked to underline all the technical terms in ten of their key pamphlets. My collaborator and I found 715 different technical health terms with the word, *tuberculosis,* used 103 times and one appearance only for words like *arrested disease, congestion,* and *lymph canals.* About 62 per cent of the words appeared only once, 19 per cent twice, 9 per cent three or four times, 6 per cent from five to nine times, 2 per cent from ten to twenty-four times, and 2 per cent from twenty-five to over one hundred times. This is a typical pattern of a situation in which specialists, unaware of the difficulty or complexity of a technical vocabulary, prepare reading materials for the public. Next, we asked tuberculosis specialists to list the terms most important for health education and added to it the highly frequent health words from this source and others.

Then 550 pupils in Grades VII to XII checked whether they knew the meaning of each of these 476 important health

[17] Kelley, Truman L., and Krey, A. C. *Test and Measurements in the Social Studies.* New York: Charles Scribners and Son, 1934.

[18] *Ibid.,* p. 166.

terms. We also had a number of the pupils write out definitions for some of these words. We then compared the two tests and found that for almost every word, a larger percentage had checked it as known than had actually defined it correctly on the definitions test. The average discrepancy for a small sample of words was 11 per cent. The tendency to overestimate was greater on words which were not widely known.

A third study of technical terms in health was made with adults who had about six years of formal education. Fifty of these terms were tested by a multiple-choice test, with the remaining 328 words tested by checking as known or not known. These words are presented in five categories of ascending difficulty.[19]

Other studies of technical terms are going forward. Lloyd Bostian and Bryant Kearl, University of Wisconsin, have reported their findings in the pamphlet "Frequency of Economic Terms and Concepts in Farm Magazines."[20]

MUCH fruitful information is likely to come in studies of familiarity of technical terms in areas important for the lay reader. But there are also general words used in such communications. We have seen that their level of familiarity can be roughly gauged by their Thorndike score but that this is an inadequate measure. Is there some way of testing all these words so that we can get a score on some 20,000 different words? I have made that attempt and I shall describe here what my collaborators and I have done.

My first approach was to test some 8,000 different words—words in the first 10,000 of Thorndike using a simple check as to whether or not words were known to the person seeing the word either in a list with no context, or with a phrase context if the word had several meanings or its spelling—appearance—was likely to be confusing. The validity of this method had been noted by Washburne and Morphett,[21] Curtis,[22] and Tilley[23]

[19] Chall, Jeanne, and Dale, Edgar. "Familiarity of Selected Health Terms," *Educational Research Bulletin*, XXXIX (November 15, 1950), pp. 197–206.

[20] Madison, Wisconsin: University of Wisconsin, 1956. (Bulletin No. 25, Department of Agricultural Journalism, College of Agriculture).

[21] Washburne, Carleton, and Morphett, Mabel Vogel. "Grade Placement of Children's Books," *Elementary School Journal*, XXXVIII (January, 1938), pp. 335–64.

[22] Curtis, Francis D. *Investigations of Vocabulary in Textbooks of Science for Secondary Schools*. Boston: Ginn and Company, 1938.

[23] Tilley, Harvey C. "A Technique for Determining the Relative Difficulty of Word Meanings among Elementary School Children," *Journal of Experimental Education*, V (September, 1936), pp. 61–64.

who had reported correlations of the order of .80 and .90. My own studies showed correlations between the two.[24]

I early discovered, as had Whipple[25] and Kirkpatrick,[26] that there was a tendency to overestimate knowledge and that confusion due to spelling caused errors in judgment. We were not certain that a child was checking an unfamiliar word as known merely because it looked like a word he did know. Interviews showed, for example, that *unique* was thought to be a man who lived in a harem; *belie* was defined as stomach; and *abominable* was defined as stomach trouble. Dolch found that if a pupil says the meaning of a word is unknown, a suitable test usually confirms his judgment. He suggests a combination of checking words for familiarity and objective tests saying that each one acts as a check upon the other.[27] But when asked to identify unknown words in reading materials, Elivian found that pupils omit more than half of the unknown words as disclosed by a later test.[28]

We did, however, use the method for our earlier studies and got scores on 8,000 words in Grades IV, VI, and VIII. The data were useful and publishers and writers made some use of our data. When preparing graded reading materials, the writer needs greater exactitude. The 3,000 Word List used with the Dale-Chall formula[29] was developed in this way (with additional data) and it has proved to be a usable list.

We later tried a number of devices to see if we could get an inexpensive method of testing general, non-technical words. I had children in the fourth grade read *Black Beauty* and underline words not known to them. We had Freshmen at Ohio State University and at Stephens College work with an open dictionary and check the words they did not know. This has given us scores on several thousand words likely to prove of difficulty to college Freshmen. It is a rough but useful check. It showed, for example, that over one-half of these persons

[24] Dale, Edgar. "Familiarity of 8,000 Common Words to Pupils in the Fourth, Sixth, and Eighth Grades." Unpublished.

[25] Whipple, Guy Montrose. "Vocabulary and Word-Building Tests," *Psychological Review*, XV (January, 1908), pp. 94–105.

[26] Kirkpatrick, E. A. "A Vocabulary Test," *Popular Science Monthly*, LXX (February, 1907), pp. 157–64.

[27] Dolch, Edward William. "Testing Word Difficulty," *Journal of Educational Research*, XXVI (September, 1932), pp. 22–27.

[28] Elivian, Jeannette. "Word Perception and Word Meaning in Silent Reading in the Intermediate Grades," *Education*, LIX (September, 1938), pp. 51–56.

[29] Dale, Edgar, and Chall, Jeanne S. *A Formula for Predicting Readability*. Columbus, Ohio: Bureau of Educational Research, Ohio State University, 1948.

checked as unknown words: *abacus, aberration, abettor, abeyance, aborigines, abrogate, abscond, absinthe, abutment, acetanilide, acetic, acrimonious, acrostic, actinism, accouchement, accrue, acerbity, actuary, adamant,* and *addenda.*

When we concluded that there was not any "easy" way to check on familiarity with words and get an exact and dependable score, we began testing in the sixth grade some 2,000 words which were less familiar than the 3,000 already tested in the fourth. We have used a three-choice multiple-choice test. I shall not describe here the problem of constructing valid test items. The test deviser must use effective distractors and avoid clues which will enable pupils to guess the correct choice when they do not know the meaning of the word. Our testing, although nation-wide, is concentrated in large towns and cities. Miss Beverly Bennett is reporting the sixth-grade study as her Master's thesis, and Miss Bertha Jacobs has completed the eighth-grade list, and will soon finish the tenth-grade list.

We have been testing lowest grade levels first thus making it unnecessary to re-test familiar words. We can thus be certain that the alternate phrases in the tests are expressed in familiar words. Some vocabulary tests use definitions that are as hard as the word itself.

These studies will enable a writer of expository material to get a grade-score for each word used—4, 6, 8, or 10. He will know which terms are already understood and which ones are so unfamiliar that they ought to be defined directly or in context. He can thus write with his eyes open and control more effectively the number and nature of his explanations.

WHY bother with all this vocabulary control? Is it not true that Seashore discovered that a first-grader knows 16,900 basic words, plus 7,100 derived words, a total of 24,000; that an eighth-grader knows 62,500 words, a twelfth-grader 80,000?[30] There are several implications in these questions which need clarification.

First, there is confusion about the definition of *know,* and also about the definition of a *word.*[31] Assuming that we can agree that responding to a certain test is a pragmatic test of

[30] Seashore, Robert H. "How Many Words Do Children Know?" *Packet,* II (November, 1947), pp. 3–17.

[31] Dolch, Edward W. "Implications of the Seashore Vocabulary Report" in *Methods in Reading.* Champaign, Illinois: Garrard Press, 1955, pp. 260–69.

knowing, we still must define a *word*. The *Webster's New International Dictionary* presents 43 meanings of the word *make*. The editor, P. B. Gove, informed me in a letter, dated October 23, 1955, that these are all counted as one word, but the 196 compound words formed by using *maker* are all counted as separate words, starting with *anvil maker* and ending with *wine maker*. If you compare an abridged dictionary with an unabridged, you will note in the latter the sharp increase in the number of words that are variant forms of the same root.[32]

Second, there are likely sampling errors and testing errors of significant size. For example, the sixth-graders in Seashore's study knew fewer words than the fifth-graders.

Third, the gain of some 10 new words a day suggested by the Seashore study does not fit the known facts about vocabulary growth. In the free-association word study carried on by Buckingham and Dolch, they found 9,520 different words and assumed that the vocabulary of children grows at the rate of about 1,000 words a year. If we think in terms of root meanings, not derived forms which can be regularly constructed from these roots, I believe that this is a pretty sound figure. Obviously, for some children it will be less, for some it will be more.

Fourth, if the twelfth-grader has a vocabulary of 80,000 words, he knows as many words as are in the 896-page Thorndike-Barnhart dictionary which includes 80,000 entries.

Fifth, even if a pupil does know a larger number of words than we previously assumed (and this is probably true), we still cannot abandon vocabulary control of expository materials which most pupils in a grade level have to read. For example, here are familiarity scores on social-studies terms obtained by Luella Cole testing eighth-grade pupils: *Whig* 35, *primary* 59, *suffrage* 58, *conservative* 31, *partisan* 52, *radical* 31, *lobbying* 24, *patronage* 26, *spoils system* 26, *commodity* 18, *competition* 48, *consumer* 72, *exploit* 19, *rebate* 35, *inflation* 38, *primitive* 43, *precedent* 23.

But even when figures for size of vocabulary or rate of growth are stated, we must begin to hedge. We have no data on slang, semi-vulgar expressions (the word *snot* does not appear on any published list of words written by children in literature as far as we can discover). Many words are metaphorized: *wolf*, *dog*, *cat*, *peach*, *banana*, *tree*, *rose*, *book*—and

[32] *Webster's New International Dictionary* see *vocabulary entry* page 2854.

thousands of others. Are they to be considered as separate words? What about the 43 different senses of the word *make* which the dictionary maker counts only as one? Are some of them so highly uncorrelated in meaning as to make them, in fact, different words?

Shall we then throw up our hands and exercise no vocabulary control? I think not. Rather we ought to get scores on the familiarity of these terms, rate their importance perhaps, and then write as needed. We shall, of course, not avoid hard or unfamiliar words since they may be rich bearers of meaning. But we should know that they are hard or unfamiliar.

Here are some words on a single page of a junior-high school textbook noted as hard in context by some seventh-grade children who were studying it. I give our eighth-grade score on these items. The seventh-grade score is probably 10 points lower: *manor* 60, *implements* 67, *wheelwright* (no score), *conquests* 69, *self-sufficient* 67 (*sufficient* is 35 in Grade VI), *loyalty* 82, *missionary* 82, *primitive* 77, *encourage* 80, *thorough(ly)* 81. The writer of this book should know that for some of his readers this page has a heavy vocabulary burden and either reduce it, define these words, or use them in a more revealing context.

Further, since wide reading is the chief method by which we learn to read, we ought to be able to make available to children and adults a wide variety of material two or three grades below their top level of ability—material like *Harper's* or *Time* or the *Atlantic Monthly* for the readers of this article.

Finally, when we study vocabulary, we do not assume that words are like bricks—each having an independent, unrelated entity, a meaning that can be stored in the dictionary and used on a somewhat mechanical basis. Technical terms, of course, have much more restricted meanings—have less elbowroom. But the essence of language is fluidity, not rigidity.

But because language has a growing edge, does not mean that it lacks solidity. If there were none, we could not communicate with each other. It is this solid core of relatively permanent meaning that we have been trying to measure. And I believe that intelligent use of such data would make more readable books and magazines, would help us to better distribute the moral, political, and historical wisdom that Shelley talked about.

Investigations of Teacher Supply and Demand Reported in 1955

By EARL W. ANDERSON, MARGARET A. VESEY, AND CHARLES M. RAYBURN

REPORTS of investigations of teacher supply and demand appearing in the literature in 1955 indicated that the conditions were about as was anticipated. The critical shortage of elementary-school teachers continued without change. The shortage in the secondary field became more acute in many subjects, while the college needs became larger with no increase in the number of teachers available. Causes of shortages remained the same. Predictions gave little hope for improvement in the near future. Efforts to get former teachers to return, to interest liberal-arts graduates in preparing for teaching, and to get high-school pupils interested in teaching were accelerated. An increasing concern was shown for the predicted shortages of college teachers within the next decade.

Nation-wide studies reported during the year 1955 were: the Eighth Annual Study of Teacher Supply and Demand in the United States (48), with related studies in physical education (35) and mathematics (36), a nation-wide analysis of advance estimates from state departments of education (47), a general analysis of the present situation and a forecast of future needs for teachers at all levels (21), and a study of the college and university situation (68). State-wide studies were reported from California (8), Indiana (58), New Jersey (50), and New York (53, 54). Other major studies were: an index of teacher supply and demand by subjects for the nation (5), reports of teacher shortage in Canada (28, 38), an overview of the teacher supply and demand situations since 1907 (10), an analysis of factors which influenced high-school students in Delaware to select teaching as a vocation (17), and three studies dealing with the need for teachers in higher education (9, 27, 41).

High spots in the Eighth Annual Study of Teacher Supply and Demand in the United States were: twice as many new elementary-school teachers were employed in 1955 as graduated from four-year elementary-school teacher-education courses that year. The 36,885 graduates of four-year programs for preparing elementary-school teachers were 4.36 per cent

fewer than for the previous year; the 51,418 graduates newly prepared for high-school teaching were 5.1 per cent more than in 1954. Due partly to the 34-per cent decrease in the number of all college graduates, the number prepared for secondary-school teaching in 1955 was 40.8 per cent less than in 1950. The percentage reductions of graduates prepared for teaching specific subjects over the five-year period were: art 12, music 15, home economics 16, women's physical education 20, mathematics 51, men's physical education 52, industrial arts 54, and science 57. The percentages of the 1955 graduates planning to teach in elementary schools were 65 for men and 82 for women, in high schools 47 for men and 44 for women. In 1955, an analysis of 468,445 elementary-school teachers in 32 states revealed that 68 per cent held college degrees, whereas only 6 per cent had less than two years of college preparation; in 1950 these percentages were 47 and 17, respectively (48).

Reports of state department of education officials of the 48 states to the National Education Association revealed that for 1955 there were 80,815 emergency certificated teachers among the total teaching staff of 1,201,392 employed in public elementary and secondary schools in the United States—about 7 per cent (47). This was approximately the number of emergency teachers reported during each of the recent years.

The forecast made in the Ford Foundation Report is that the public schools must find sixteen new teachers by 1965 for every ten present teachers. For colleges, if the present student-teacher ratio of 13 to 1 is continued, for each ten teachers now employed from sixteen to twenty-five new teachers must be obtained by 1970 (21).

Ratios of supply to demand by teaching fields for each year 1949–50 through 1953–54, for the United States, were calculated by Bartels. He used the data from the annual studies made by the National Education Association. For 1953–54, he found the greatest demand in rank order in library science, elementary education, physics, mathematics, general science, and English. Lowest demand was in speech and in physical education for men (5).

A REPORT prepared by the California State Department of Education showed that one teacher in eleven was serving on a substandard credential in October, 1954; that the esti-

mated number of teachers qualifying for credentials in 1955 was one-fifth greater than the number in 1954; that one-fifth of those who qualified as elementary-school teachers and one-half who qualified for secondary-school teaching did not take teaching positions. Half of those granted credentials in California were prepared in out-of-state institutions. A shortage existed in elementary schools and in the secondary fields of mathematics, English, librarianship, language arts, life science, general science, business education, vocational arts, Spanish, elementary administration, and child welfare. An even balance was anticipated in speech arts, social studies, Latin, French, art, physical education for men, and agriculture (8).

For Indiana, questionnaire returns from institutional teacher-placement offices and from superintendents of schools were tabulated by Phillips. In that state, 1,700 teachers left teaching in 1953–54, whereas 3,116 were added to teaching staffs in the autumn of 1954. Two-thirds of the new supply were from colleges or from the ranks of homemakers, while one-third came from industry, military service, or public schools outside the state. Shortages were in elementary schools and in high-school English, mathematics, and library science. An oversupply was found in physical education, social science, and general science. The number of new teachers employed was twice the number of college graduates prepared to teach in Indiana colleges that year, and was three times the number of such graduates who accepted teaching positions in Indiana (58).

The New Jersey study made by the Department of Education showed that public schools gained 156 more teachers from non-teaching occupations than they lost for the year 1953–54: 734 gained from home duties against a loss of 691 to this occupation, and a gain of 276 contrasted to a loss of 163 to other occupations. Thirteen per cent of the pupils were taught by teachers not fully certified for the specific duties to which they were assigned. Eighty per cent of all teachers new to New Jersey were employed in elementary schools (50).

In New York state, "beginning with 1954–55, the total public school population . . . will exceed any previous year in the history of public education by a considerable margin, and move rapidly upward to . . . 1965" (54, page 3). By 1965, the teaching staff will increase from 91,000 to 120,000. The greatest demand during these years will be for secondary-school

teachers. Replacement in up-state New York will require more teachers than will the expanded enrollments. In up-state New York, teachers from home duties made up 22 per cent of all new elementary-school teachers. Of the new teachers, 6 to 13 per cent had had no contact with professional developments in education for ten years. The superintendents of schools believed that the quality of new teachers was not deteriorating except possibly that of some elementary-school teachers (53).

Maul reported that only 47 per cent of the men and 76 per cent of the women majoring in physical education taught. He wrote, "the need for qualified women [in physical education] is perhaps greater than in any other subject taught in the whole school program" (35, page 31). He also revealed that four out of every ten members of the 1954 graduating class who could teach mathematics did not (36).

In Canada the situation was similar to that in the United States with a notable shortage in science and with 20 per cent of the teaching staff below minimum qualifications (28, 38).

Chandler reported that except for an oversupply between 1925 and 1935, there has been a shortage of qualified teachers in the United States since 1907, and that suggestions for improvement have been similar over these years of shortage (10). High-school students in Delaware thought that school teaching ranked a poor second to secretarial work in choice among six occupations. The other four were: farming, nursing, engineering, and factory work (17).

ADMINISTRATORS from 673 colleges and universities reported to the National Education Association regarding the supply and demand in full-time college teaching in 1955. A great shortage occurred in physical science, mathematics, education, and business and commerce. More than an adequate supply was reported by substantial numbers of the respondents, in social science, English, fine arts, and foreign language. Expansions in enrollments were anticipated in English, physical science, social science, mathematics, education, business and commerce, and fine arts (68).

Full-time enrollments in higher education in California are expected to more than double between 1955 and 1965 (9, 27). College administrators in Virginia reported to Miller their estimated capacity through 1970 to be materially lower

than the estimated demand for college instruction, with limited expansion planned by the nonpublic institutions (41).

THE major causes of the teacher shortage were listed as follows:

1. Imbalance between the low birth rate of the 1930's and the high birth rate since 1945. This results in fewer college-age students to be prepared as teachers (7, 19, 48, 50, 61, 63, 65) and more students to be taught (9, 20, 21, 42, 44, 50, 63).
2. Low public esteem accorded teachers (10, 19, 34).
3. Low salaries (10, 24, 34, 57).
4. Strong competition of other occupations (48, 50, 63, 65).
5. Unfavorable working conditions of teachers (7, 34, 38, 43, 50, 58).
6. Higher licensing standards (7).
7. Employing substandard teachers (43).

It was pointed out that military demands have taken many men from teaching and from potential teaching (48); that many homemakers who temporarily returned to teaching during and following the Second World War have gone back to full-time homemaking (50); and that many potential teachers are unwilling or unable to pay the costs of preparation (43).

THE Office of Education estimated that total enrollments would increase between 1955 and 1965 as follows: in elementary schools, from 27,738,000 to 35,659,000, approximately 20 per cent; in secondary schools, from 7,422,000 to 11,890,000, approximately 60 per cent; in colleges, from 2,740,000 to 3,953,000, approximately 45 per cent (20). The net increase of 1.5 per cent in the number of elementary- and secondary-school teachers prepared in 1955 over 1954 (48), and the current output of college teachers both seem to indicate that the shortage of teachers at all levels will get more severe during most of the next ten years (68). There is a further possibility that the supply of new elementary-school teachers drawn from home duties—22 per cent in New York State (53)—may diminish sharply soon.

Five recommendations for improving the teacher shortage, mentioned by five or more writers were:

1. Change present arrangements that govern the recruitment, preparation, and utilization of teachers (1, 2, 13, 17, 21, 24, 26, 29, 42, 50).

2. Raise salaries and make them more flexible (1, 2, 11, 17, 18, 21, 57, 66).
3. Aid potential teachers in the expense of their college preparation (17, 21, 22, 23, 26, 28, 56, 66).
4. Make better use of visual aids and teacher assistants (1, 7, 13, 23, 25, 26, 29, 45).
5. All colleges not now offering teacher-education curriculums should do so (3, 34, 41, 42, 56).

Other recommendations were that: departments of science and mathematics in colleges and universities should accept teacher education as a major responsibility (1). Higher certification requirements, better retirement plans, more satisfactory teaching loads, and more personal freedom should be provided in the teaching profession (2). Public-school administration should be more democratic (2). High standards for admission into teaching should be set up (10). The whole educational program and organization should be critically evaluated (13); more active efforts of teachers should be enlisted in recruitment(14); and the interest and ability of talented youth should be challenged and utilized in teaching (21). The school program should be shortened (25). Less-qualified people should be admitted into teaching and upgraded through in-service education (25), and men teachers should be excused from military service (34).

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In-Service Education for 1984

By ARTHUR W. FOSHAY

THE child born today will be twenty-eight years old in 1984. Whether he is a free man or at the mercy of Orwell's Big Brother depends on the way he is educated. His formal education will begin five or six years from now.

Let us look at the school he probably will enter. For one thing, the teachers he will face will vary enormously in quality. At their best, they will be well-educated, professionally skillful people. At their worst, they will be ill-informed, though probably well-intentioned folk, for whom teaching is a bag of tricks. The majority of our 1984 man's teachers will be in between, qualitatively. Good or poor, however, they will have one thing in common with all of us who are adults now—their education will be out of date for 1984.

The point I wish to make is that the freedom of all of us in 1984 depends on the education we offer in the immediate future, and that the wisdom of the past generation will be dangerously out of date for those in power during the 'seventies and 'eighties.

An interesting article by Bronowski illustrates the point. He quotes from Winston Churchill's directive of 1941, which resulted in the beginning of the atomic-bomb research project in England, as follows: "Although personally I am quite content with existing explosives . . . " To Bronowski,

> this bland phrase is a monument to nonscientific education. . . . for it could have been written only by a man, an intelligent man, who simply does not understand how big a million is. The difference between atomic explosives and ordinary explosives is the difference between the length of a nuclear bond and a molecular bond; and this is a factor of more than a million.[1]

Concepts of this sort must be a part of the broad background of those in power, or Orwell's *1984* is a real possibility, says Bronowski. Since, in a democracy, the statesman cannot rise far beyond the understandings of those whose creature he is, the educated man of 1984 must know in his bones the difference between ten and a million.

[1] Bronowski, J. "The Educated Man in 1984," *Science*, CXXIII (April 27, 1956), p. 711.

While the release of atomic energy is the most dramatic scientific event of our time, it is possible now to name other events, equally fundamental though less dramatic, which must be deeply understood by us—or we will be at the mercy of those who do understand them. What, for example, of the awakening of the country I was taught to think of as the "sleeping giant"—China? What does the general demand for independence in Asia signify for us in 1984? What are we to think about "brain washing"? Are we content merely to rail at those who use this weapon against us? Or to consider this as simply another form of fiendish torture? The difference between physical torture and "brain washing" may well be of the order of ten to a million.

If we leave it at that, we will have been guilty once more of an ancient pedagogical sin—that of talking a crisis into nothingness. We have to do better, if the difference between the last generation and the next is the difference between ten and a million—not ten and a hundred, as it was between the world wars. We have to act, for if we do not, others will.

To meet this kind of problem, we who educate must attend to our own education. We have to do it on a scale never attempted before, and at a level of penetration we have not thought of. What I am proposing is that boards of education consider the whole education of the teacher their urgent business, and that continuing in-service education on a massive scale be thought of as the basic defense for all of us against a menacing future.

In a way, this need is obvious. But many an educator has missed it. Consider, for example, the appalling statement about in-service education in the recent "Yale-Fairfield Study of Elementary Teaching." After describing it at its worst, the study warns administrators to "keep a jealous eye on such demands on teachers and see to it that they are not imposed upon to the detriment of the quality of their teaching."[2] And this is all that is said on the subject! Such a pinch-minded failure to recognize the urgent need for good in-service education, the possibility of broadening it to prepare teachers for their significant rôle in educating the man of the future, the fact that

[2] Hill, Clyde M., editor, *et al.* A co-operative project conducted by Yale University and the Fairfield, Connecticut, Public Schools and financed by a grant from the Fund for the Advancement of Education. New Haven, February, 1956. p. 248.

teachers complain only about poor in-service work, not good in-service work—such a failure is dreadfully serious.

I have said that the whole education of the teacher is the business of a board of education. Such a concern is expressed through the in-service education offered to the teaching staff. The board should provide funds—beginning, for example, with 2½ per cent of its operating budget. The board should authorize the use of school time—beginning, for example, with ten days per school year or the equivalent. The board should make its policy on what is to be included in in-service education broad enough so that the urgent need is met for a professional staff with a modern education.

For one thing, such a broad education should include the building of modern scientific concepts. Such material should not be taught teachers because of its vocational value—as something to be taught to children. It should be taught to the teachers as adults, so that they will have it in the back of their minds as they teach the man of 1984—in exactly the way that Churchill should have had the difference between one and a million in the back of his mind when he wrote the directive of 1941.

For another, in-service education should include experience with educational research, for a teacher, to try something new, must have the means for evaluating it in action. It has been amply demonstrated during the past eight or nine years that the means can be placed in a teacher's hands quickly.

What of "professional" in-service education? The primary need in the education of the man of 1984 is the ability to organize new knowledge quickly, and to make new meaning. In the degree that he is adaptable and inventive, he will be able to maintain his freedom from those who would enslave him. To increase this kind of ability on a scale that proceeds from ten to a million, and in time, professional in-service work will have to deal with the thinking processes of children—the ability to formulate problems (not merely to solve them). It will have to deal with children's moral values, if "brain washing" is not to defeat us. It will have to deal with the development of their conceptions of themselves and those around them, if our society is to remain sufficiently flexible to stand the strains being put upon it. In-service education will have to deal with

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READINGS

Books to Read

DREIMAN, DAVID B. *How to Get Better Schools: a Tested Program.* New York: Harper and Brothers, 1956. xvii+267 pp.

The claim on the first page, Chapter 1, of this book that "everyone is publicly in favor of public education," is a gross overstatement, as the book later indirectly admits. There are several such "facings both ways." It is true that public schools have increased in public esteem, and vilification of them has decreased, in recent years. For this, due credit should go to the National Citizens Commission for the Public Schools. It is one purpose of this book to present those claims. Other organizations also have been active. The author does not omit the names of older groups, such as the National Congress of Parents and Teachers, but they receive only "honorable mention."

The most useful portion of this book is Part III, a section of 160 pages, which tells how the Commission operated and what it learned about the most effective methods to promote public education. The treatment of Part III is based upon the Commission's "working guides," on how to organize local and state school improvement committees, how to conduct a campaign, make use of means of publicity, gain and hold the confidence of school boards and superintendents, and so forth. This material is well conceived and much better written than the self-conscious chapters with which the book opens. Most of the doctrine of Part III is taught in courses in school administration, but it is a service to put it simply and attractively in a book for the general reader and the citizen eager to improve his schools. In an informative introduction to the book, Chairman Roy Larsen tells of the inception of the Commission and his own experiences while working with it.

HARRY G. GOOD

DENNISON, CHARLES P. *Faculty Rights and Obligations: in Eight Liberal Arts Colleges.* New York: Bureau of Publications, Teachers College, Columbia University, 1955. xii+186 pp.

This book reports an interesting study of the provisions which eight liberal-arts colleges have established in relation to faculty rights and obligations. The colleges surveyed were Colgate, Haverford, Hobart, Mount Holyoke, Sarah Lawrence, Swarthmore, Vassar, and Wesleyan. The questions to which answers were sought are: What actually are the formal provisions relating to faculty rights and obligations? How have such provisions come to be adopted? How have they operated in practice? What are the principal opinions regarding them? What tendencies, if any, are indicated for the future?

Practice regarding the statements of faculty rights varied greatly even among these carefully selected, more or less homogeneous colleges. There was no single area of faculty rights and obligations described by all eight governing boards. Furthermore, the recognition given to these rights and obligations ranged from published trustee legislation to unwritten though consciously formulated policies. Faculty participation in legislation governing faculty

rights also varied greatly from college to college. The areas covered in the study were conditions of appointment and promotion, tenure, salary, insurance, academic freedom, professional growth, and the interrelationships of faculty, administration, and governing boards.

From this study, it seems evident that there is a distinct value in official documents setting forth the rights and obligations of faculty members. While no one written code or statement was proposed, the experience of these eight schools would indicate the desirability of each college preparing and publishing its own statements of faculty rights and obligations.

RONALD B. THOMPSON

GRAMBS, JEAN D. *Education in a Transition Community*. New York: National Conference of Christians and Jews, 1954. 124 pp.

This pamphlet is concerned with the integration of various groups, minority, racial, ethnic, or new residents, in schools and communities. It is especially appropriate in view of the challenge offered to many school systems by the United States Supreme Court decision of March 17, 1954, declaring segregation to be unconstitutional.

The material included is organized with the needs of public schools in mind and is designed "to help school administrators, teachers, parents and community leaders to choose wise policies on the basis of the experience of others."

Though the author describes it as a how-to-do-it pamphlet, there is no attempt to promote a blueprinted, one-way solution of the complex problems of integration. Attention is given to social and cultural background factors in the American scene, barriers to change, and an analysis of groups and group differences.

After this lengthy introduction, the discussion revolves around the setting of school-board policy through administrative planning with teachers, the community, and the children. The remainder of the book is composed of case studies illustrating the principles of action analyzed by the author. The pamphlet is provocative and illuminating.

FLORENCE GREENHOE ROBBINS

BENNETT, MARGARET E. *Guidance in Groups: a Resource Book for Teachers, Counselors, and Administrators*. New York: McGraw-Hill Book Company, Inc., 1955. x+411 pp.

One need only glance at the copious lists of references at the end of each chapter of this book to realize that the material is gleaned from many sources and experimental studies. Such a review of ideas, studies, and techniques in group guidance should be valuable for the student in the guidance field and helpful to those planning and working in guidance programs on the elementary, secondary, and college levels.

The author appraises the latest developments in guidance theory and practices, writing in readable fashion with the newer terminology well defined. She points out the need for a complementary use of both individual and group counseling and describes techniques that can be learned in group experiences, such as the art of listening, identification of rôle, group interest in addition to self-interest, the function of the leader, and problem-solving techniques.

There are chapters which describe sources of group approach, such as religious, educational, psychiatric, counseling, college orientation, and core at different age levels. The author describes the encouraging work that has been done with elementary- and secondary-school students in teaching self-awareness and interpersonal relationships. Possible programs, desirable approaches, and precautions in setting up programs of vocational and educational guidance are specifically outlined. In the appendix is a narrative account of a human-relations program for the primary child by Celia F. Johnson.

RACHEL RICHARDS

DEKOK, WINIFRED. *You and Your Child.* New York: Philosophical Library, Inc., 1955. vii+147 pp.

In twenty brief chapters, the author presents a wide variety of information about child care from birth to adolescence. The book is written in a very simple, direct style as though the author were talking with a parent and helping him to meet the common, everyday problems that all parents face. Attention is given to physical needs, emotional problems, religion, security, and freedom of children, as well as many other phases of child care.

Parents may find that the very direct and specific answers to questions such as, "What can I do to make him eat?" (pages 55–56) will be helpful to them. And yet, in some ways the content might seem strange to American parents who are not accustomed to the terminology of British writers.

In the foreword, the author states her beliefs about child care and emphasizes this point of view throughout the text:

> If I were to make one golden rule for parents, teachers and others responsible for the care of children, I would say: "Respect the child's individuality." By this I do not mean unlicensed freedom. If you respect a child's individuality, you build up his self-respect, without which he is nothing, swept hither and thither by every wind that blows.
>
> By respecting him as a person you put value on him which brings out all that is best in him.
>
> It is a very simple rule but I have found it works in all sorts of difficult situations (page v).

ESTHER SCHATZ

SHANE, HAROLD G. *Research Helps in Teaching the Language Arts.* Washington, D. C.: Association for Supervision and Curriculum Development, National Education Association, 1955. vii+80 pp.

This publication is one of the series of "Association for Supervision and Curriculum Development Research Helps." It was planned in terms of "what teachers themselves said that they would like to know" (page 2) about teaching in the language-arts fields. From approximately thirteen hundred queries gathered through an ASCD poll, forty-nine basic concerns were derived. These concerns pertaining to reading, hand writing, creative writing, spelling, language usage, children's literature, listening, foreign languages, and oral English. For further study in these nine fields, more than eight hundred carefully examined titles are included.

Teachers will find this publication a valuable resource for examining and

improving practices in the language-arts fields. If they are looking for research data concerning a specific field, they will find many inspirational clues in the significant findings cited. If they are looking for the interrelatedness of these various fields, they will find references to research which has to do with such correlations. In any event, the reader is given every opportunity to bring his own purposes to bear on his selective use of these research findings, for there has been no attempt to shape opinion. Instead, conflicting research data are frequently presented and needed research clearly indicated.

The help given by hundreds of people in the preparation of this publication can very well serve thousands upon thousands of other people in sorting out their concerns and, in turn, contributing to further improvement in language-arts programs.

MARY JANE LOOMIS

HENRY, NELSON B., editor. *Adult Reading: Fifty-fifth Yearbook of the National Society for the Study of Education, Part II.* Chicago: University of Chicago Press, 1956. lxxxiv+279 pp.

Several yearbooks of this society have recently dealt with the topic of reading: the forty-seventh on "reading in high school and college," the forty-eighth on "reading in the elementary school" and now this one on "adult reading." It is hoped that this volume will be of interest to public-school teachers, teachers of adults, librarians, publishers, booksellers, and research workers.

Different specialists have prepared the various chapters. Chapter I on "What Do Adults Read?" by Lester Asheim and Chapter II on "How Well Do Adults Read?" by William S. Gray present much needed reviews of the literature on the sociology of reading; here is evidence of the outcomes of our school program and, in turn, of needed improvement in our educational efforts. Chapter III entitled "Why Adults Read" by William Schramm and Chapter IV, "Reading and Related Media," by Edgar Dale discuss factors which determine the amount and kind of reading and its relation to the use of other media. Chapters V and VI by Grace T. Stevenson and by Arthur T. Hamlin on the rôle of the public library and the college library, respectively, in adult reading and Chapter VII on "The Use of Print in Adult Educational Agencies" by Cyril O. Houle emphasize descriptions of the actual programs over the country. In Chapter VIII, David H. Clift and Dan Lacy discuss "How Books Get to Adult Readers," that is, the channels of distribution. Chapter IX, "Developing Readable Materials," by Edgar Dale and Jeanne S. Chall has a nice review of problems and limitations in readability studies; some suggestions are even given on how to write more clearly. In the final chapter, "The Improvement of Reading Abilities," Paul A. Witty discusses various attempts to improve the reading ability of adults with particular emphasis on evaluating "speeded reading" programs and the attempts in the Armed Services to work with the functionally illiterate.

In the reviewer's opinion this volume represents a needed contribution to the field of reading. It brings together much material that has been developed in professional fields outside education.

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In-Service Education in 1984

[*Continued from page 135*]

all these things, and at the same time deal with the general inadequacy we all have ourselves in these fields.

Who will be the in-service educators, if all of this is involved? Why, everyone who has something to say. Professors from many fields can talk meaningfully to teachers—not as to teachers, but as to fellow adults. Professors of education can continue to help in many ways, and especially in the fields of educational research and experimentation. But the professors are not nearly enough. Business, labor, the professions, and the clergy all have much to offer, and they should be heard—not occasionally, but constantly.

Somewhere, some board of education that sees its responsibility deeply will begin in-service education on this scale. When it does, it will begin to measure up to its responsibility to the man of 1984.

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